Description of Past and Proposed Drought Allocation Methods

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Water Supply Issues Workshop

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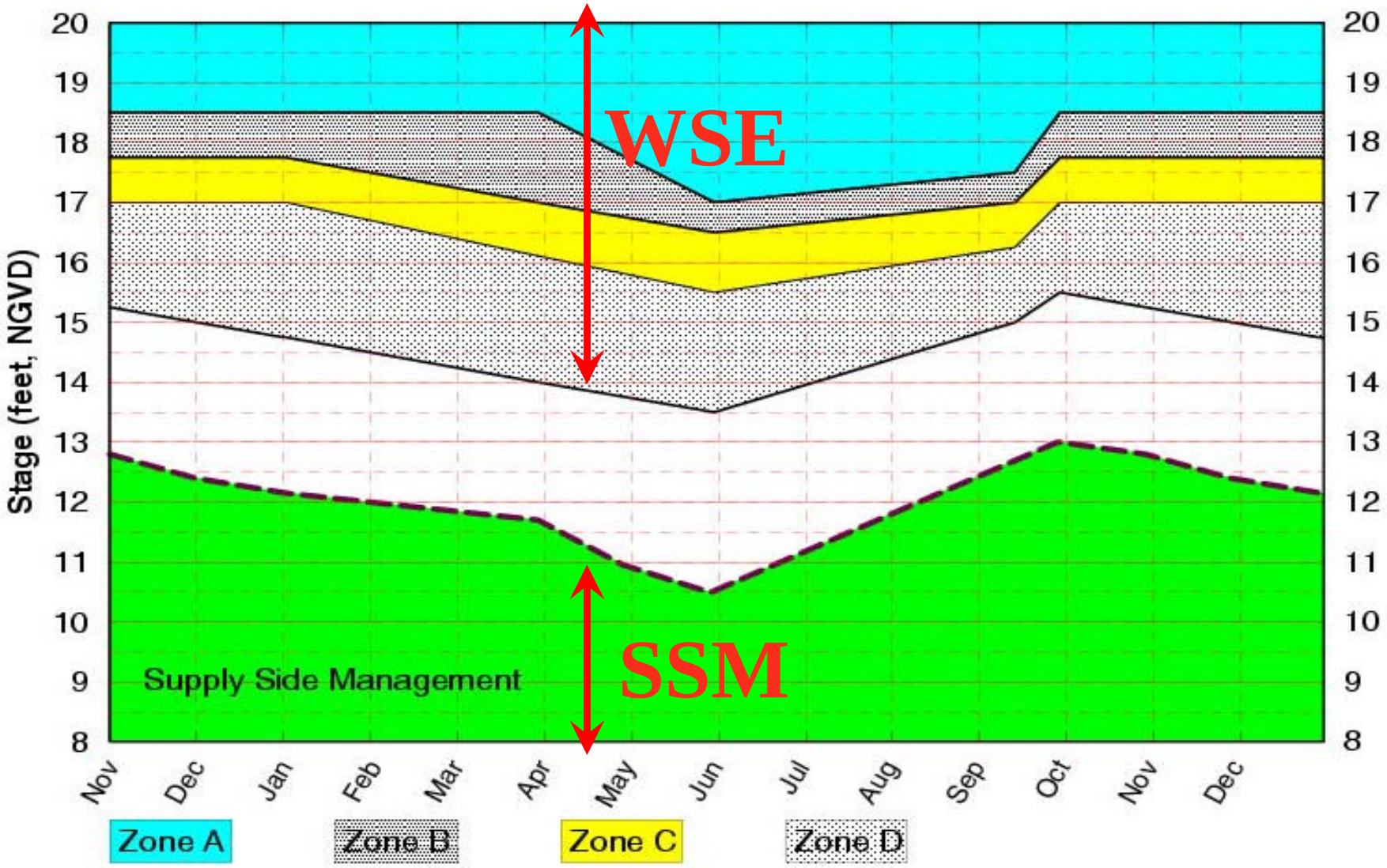
What is Lake Okeechobee Water Shortage Management?

- Computational method of allocating Lake Okeechobee water under declared water shortages

Lake Okeechobee Management Zones

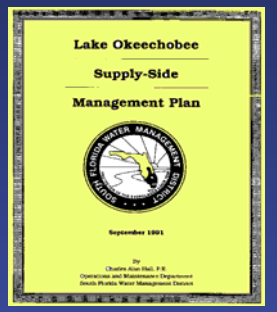


Water Supply Demands on Lake Okeechobee

- Agricultural use (Lake Service Area)
- Urban water use & prevention of saltwater intrusion
- Entitlements of Tribal lands
- Water Supply for STAs
- Environmental needs of estuaries & Everglades
- Freeze protection

Presentation Topics

I. Current Supply-Side Management Plan (SSM) (Yellow Book published in 1991)



II. Implementation of SSM during 2000-2001.

(Including adaptive measures taken to achieve more effective water shortage management)

III. Efforts to establish a new Lake Okeechobee Water Shortage Management Plan

Supply-Side Management Plan ("1991 SSM Yellow Book")

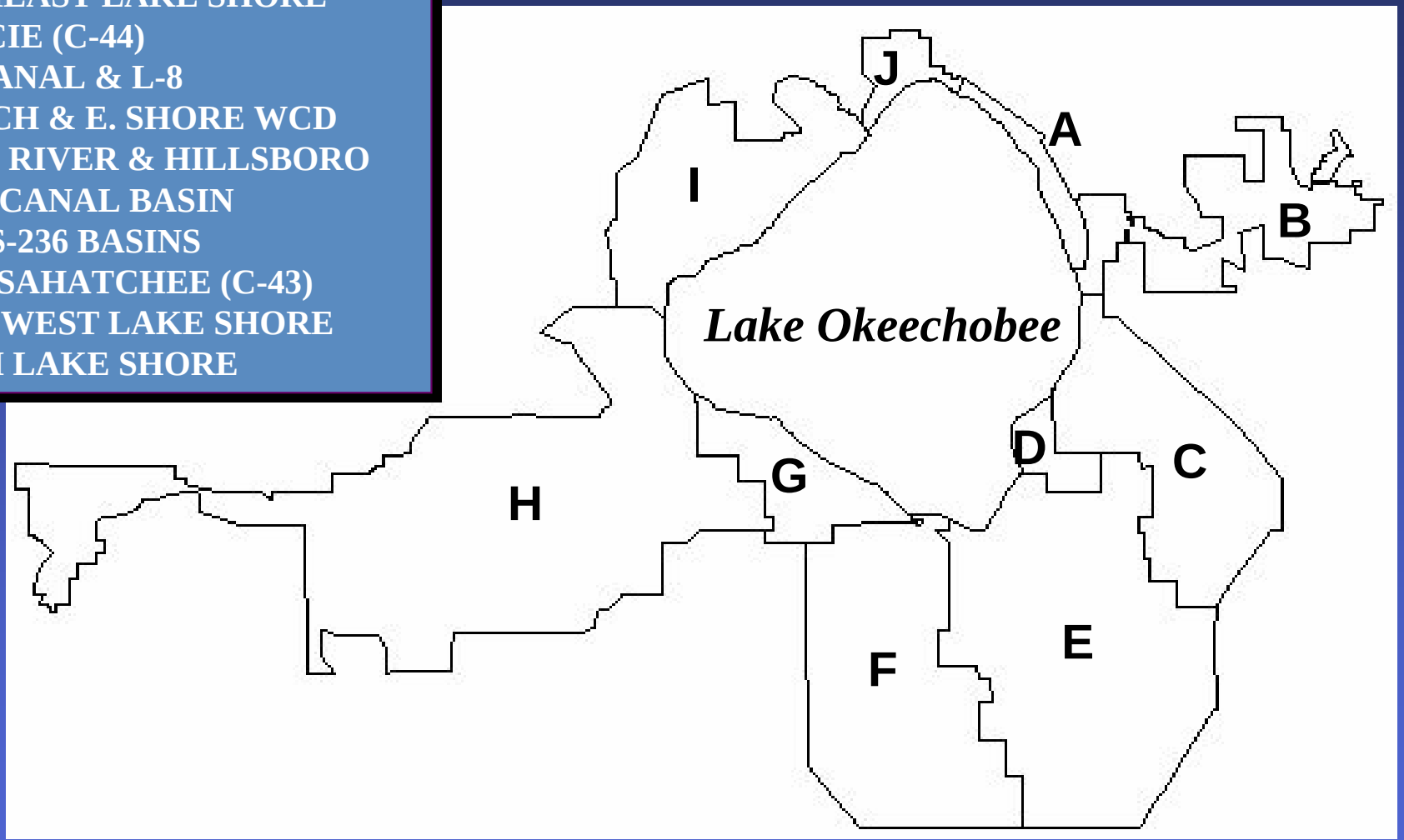
- **Allocation of limited water supply from Lake Okeechobee**
- **Attempts to manage water use in the Lake Okeechobee Service Area (primarily agriculture) and Lower East Coast (urban).**
  - Primary source for Lake Service Area
  - "Backup" water supply source for LEC Urban Area

Supply-Side Management Plan *(cont.)*

- SSM Dry Season: Oct - May
- Balances the current weekly demand with the need to hold water in reserve for high-demand periods occurring late in the dry season
- Partial flexibility to allow for fluctuations of supply

Lake Okeechobee Service Area (LOSA) Sub-Basin Boundaries

A: NORTHEAST LAKE SHORE
B: ST. LUCIE (C-44)
C: WPB CANAL & L-8
D: E. BEACH & E. SHORE WCD
E: N. NEW RIVER & HILLSBORO
F: MIAMI CANAL BASIN
G: C-21 & S-236 BASINS
H: CALOOSAHATCHEE (C-43)
I: NORTHWEST LAKE SHORE
J: NORTH LAKE SHORE



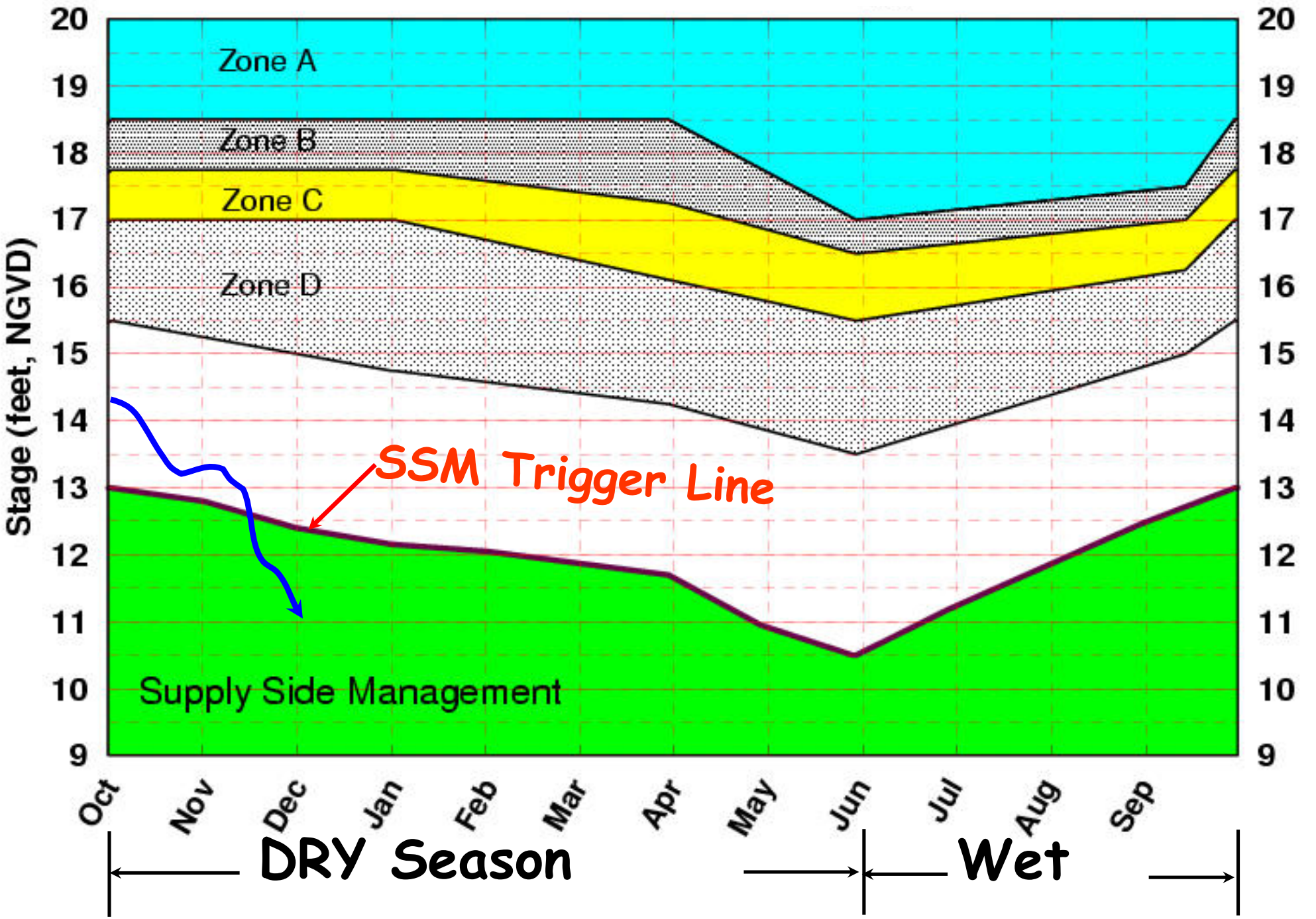
Total Sub-basin Water Demand

Subject to Supply-Side Management

Met by:

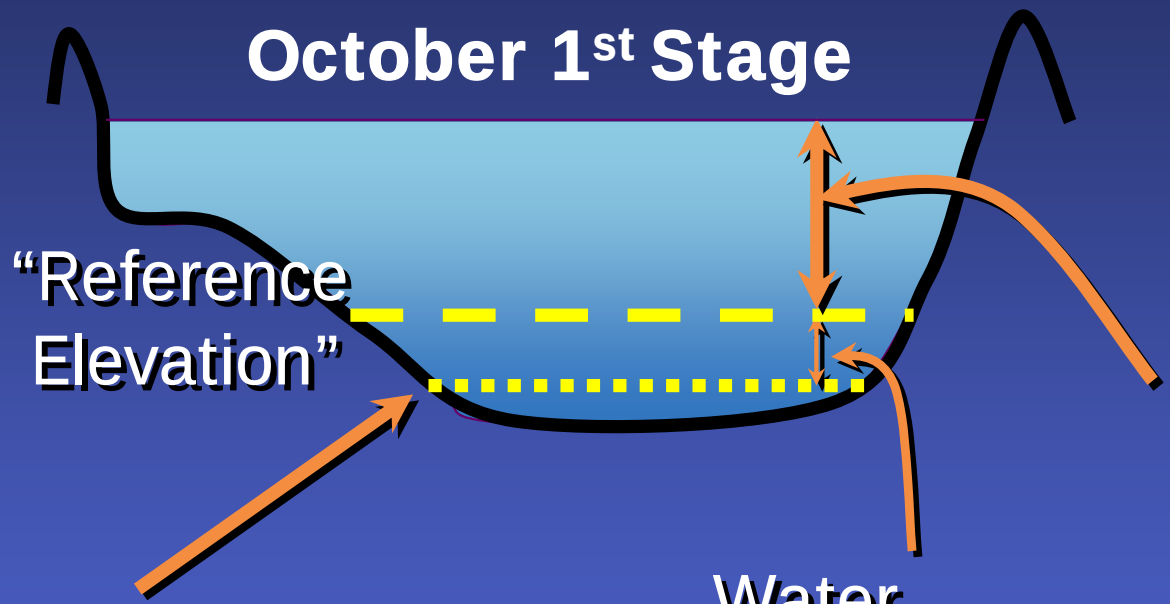
- Direct rainfall
- Local storage
- Supplemental irrigation from LOK

SSM Trigger Line



SSM Reference Elevation

A 'tool' used to determine LOSA allocation



Water available for Lake Service Area (after subtracting "normal" net evaporation losses. i.e. Rainfall - Evaporation)

Water level below which gravity outflow is limited (~ 10 feet)

Water available for LEC Urban Area and others

Reference Elevation *(cont.)*

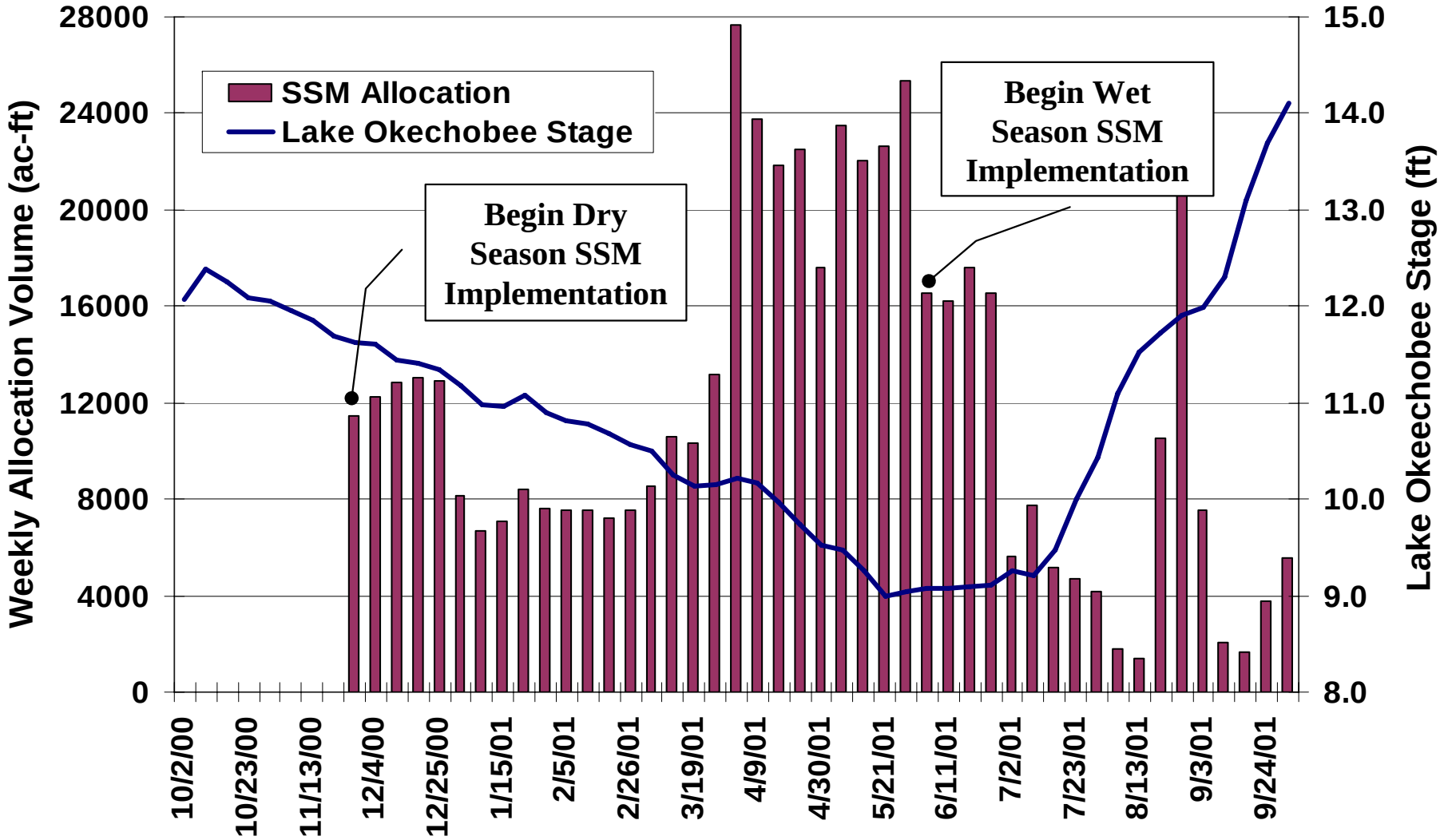
- **Requires a careful balance of:**
  - Available storage in the lake
  - Projected demands of all users of the lake
  - Drought severity, expected rainfall, inflows and evapotranspiration losses
  - Environmental health of the Lake and the remaining Everglades
  - Navigation
  - Economic Impacts

II. How SSM was implemented during 2000-2001

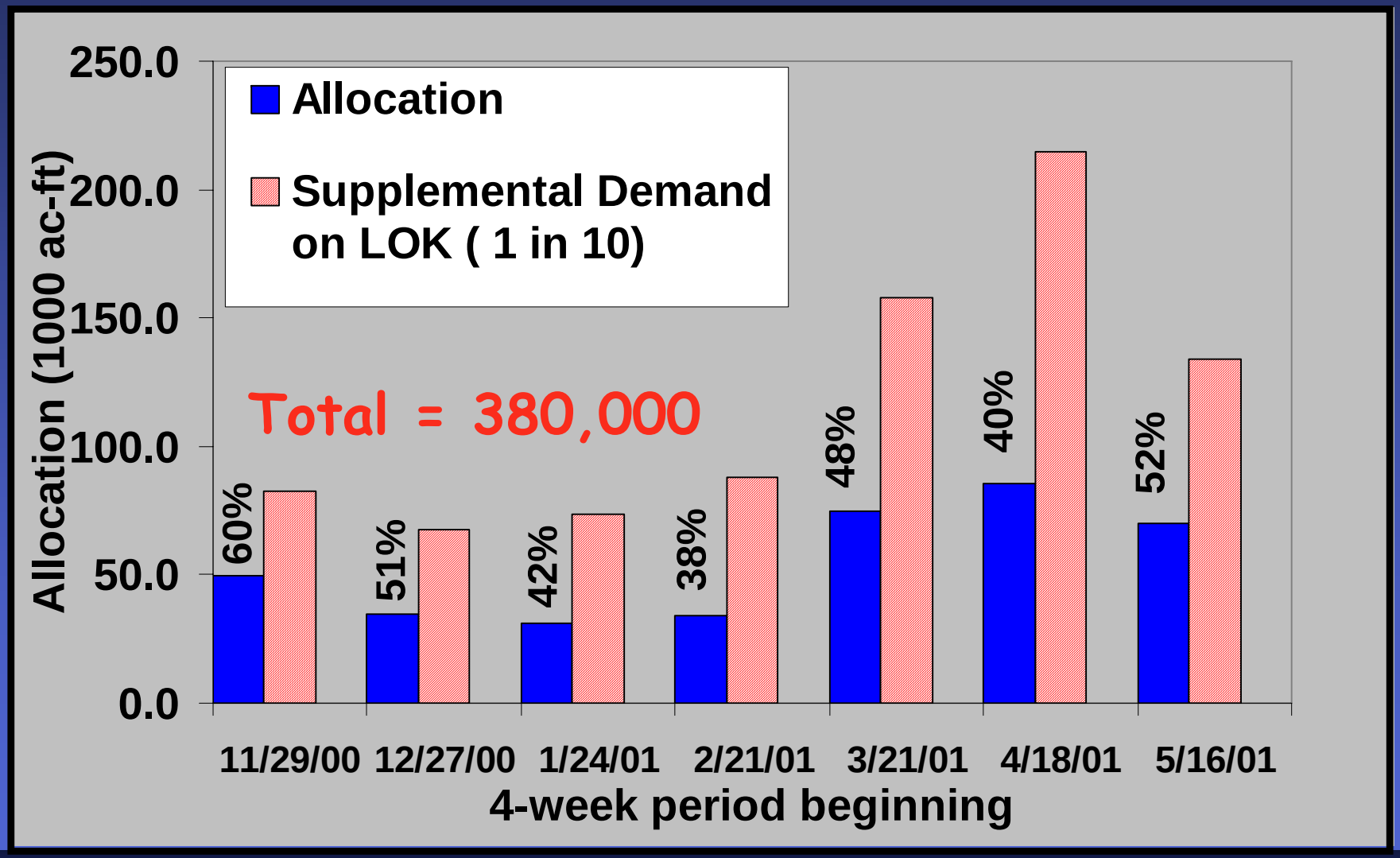
Hydrologic Conditions

- **Unprecedented drought conditions:**
  - On October 1st, 2000 lake was about 1 foot below the SSM trigger line
  - Statewide driest May in 106-year record
  - Driest 4 month period on record
  - Driest 18 month period on record
  - Drought more severe than 1 in 10 in some months of the dry season

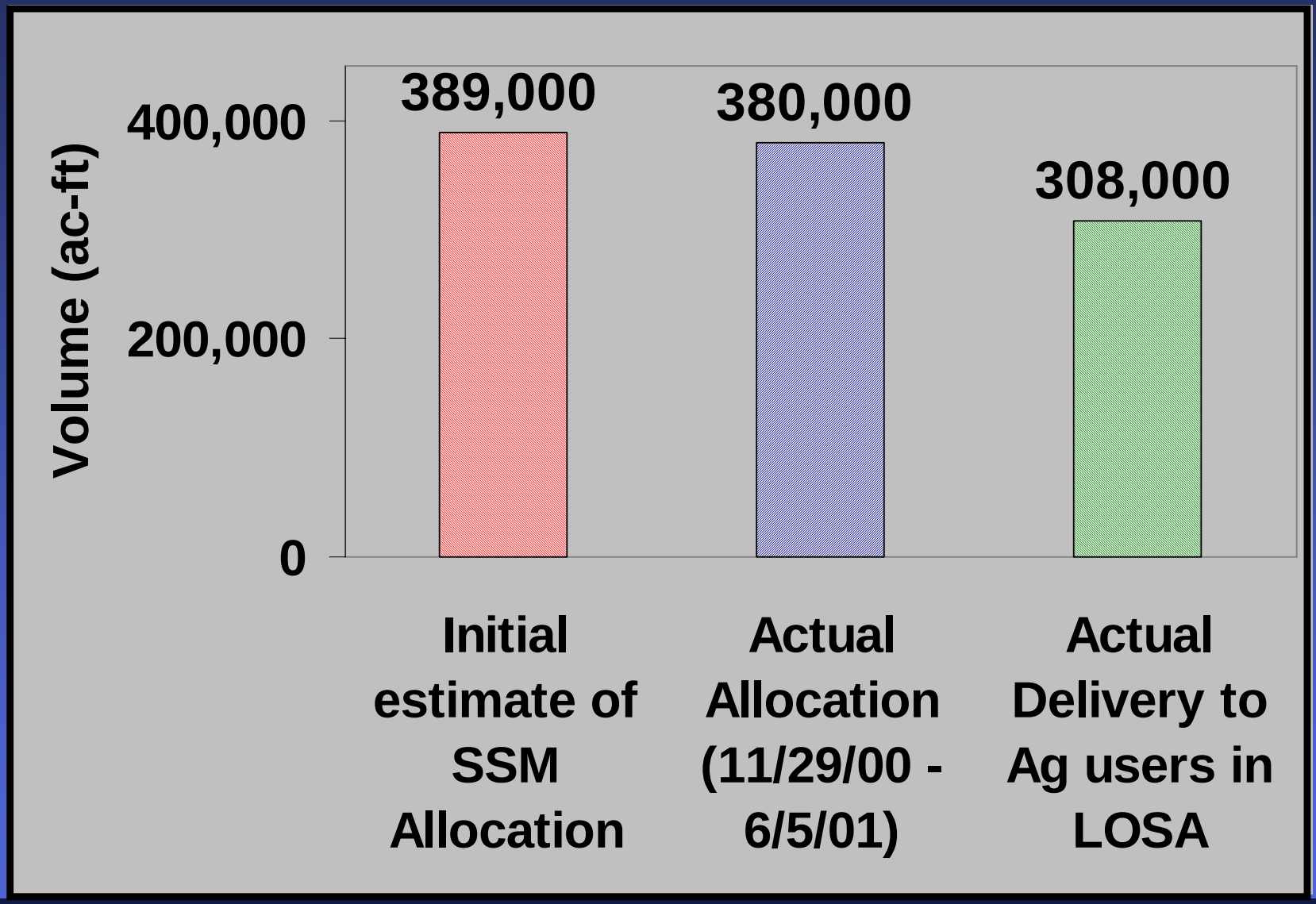
Supply Side Management Allocation and Lake Okeechobee Stage



Allocation vs. Demand during 2000-2001

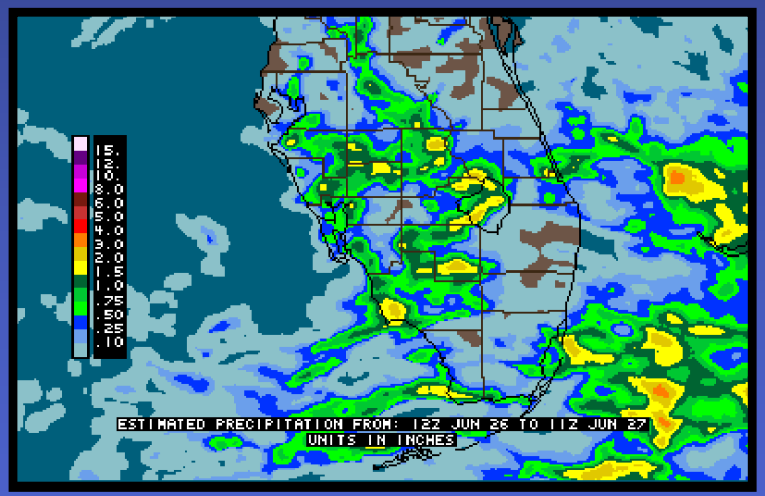


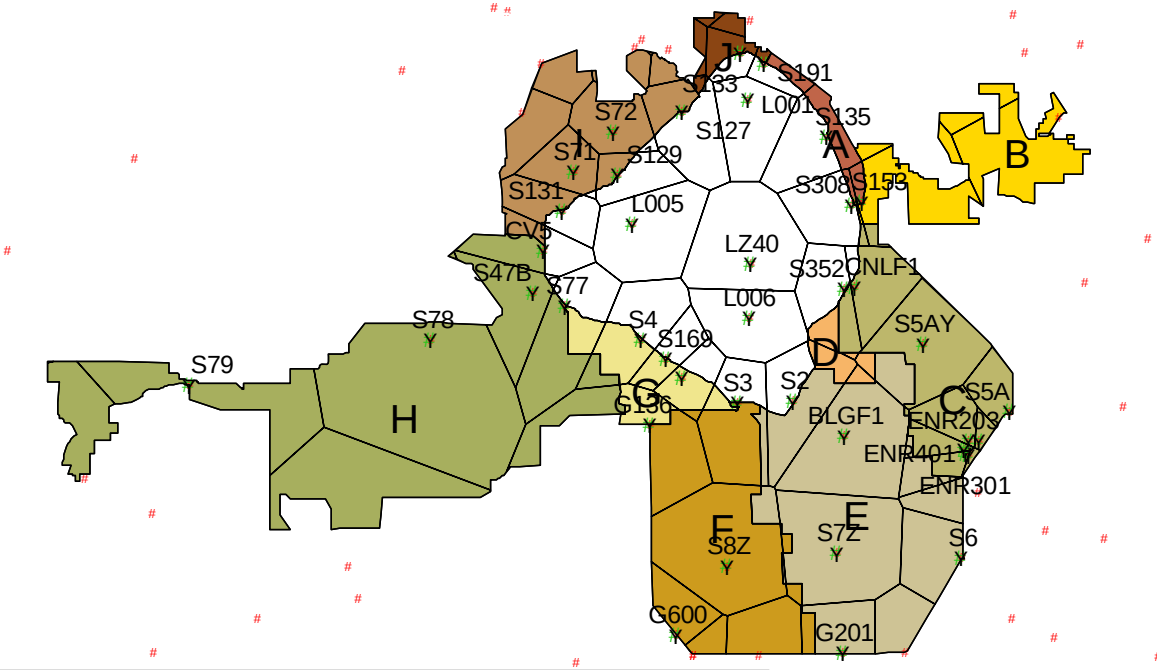
2000-2001 Allocation Summary

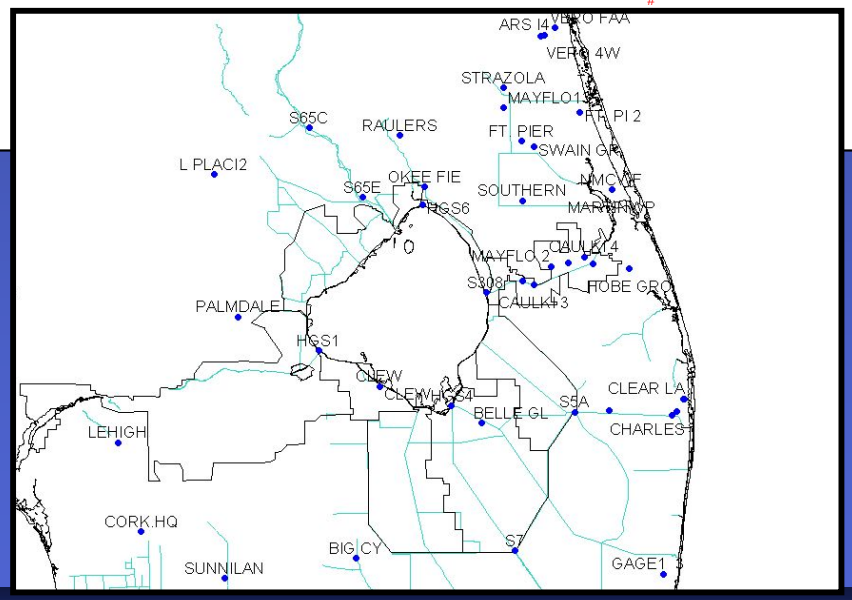


Real - Time Demand Estimation using AFSIRS

Radar image







Evapotranspiration Data

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2001 Wet Season SSM

- Low lake levels remained at the end of the dry season - SSM continued into the wet season
- No specific methodology in the 1991 Plan - ”uncharted territory”
- Relatively small supplemental demands occur during wet season

2001 Wet Season SSM *(cont.)*

- A simplified approach was developed and implemented
- Demands were estimated using the South Florida Water Management Model (SFWMM)

III. Efforts to Develop a New Lake Okeechobee Water Shortage Management Plan

Background

- SFWMD proposed updating the Plan in 2001
- Reasons for Change:
  - Shortcomings of 1991 Methodology
  - Updated LOSA demands, including C-43 basin, STAs, etc.
  - Lessons learned during 2000/2001 drought
  - To account for recently implemented water shortage rules (40E-21 F.A.C and 40E-22 F.A.C)
- Draft Plan presented- April 2002
- Final comments received- November 2004

Stakeholder Input on Draft Plan

- Cumbersome methodology
- Reference elevation concept problematic
- Suggest phased, percentage cutbacks similar to declared water shortages
- Temporary forward pumps needed during last drought; not incorporated into Draft Plan
- Conceptual approach proposed by stakeholders

Proposed Hybrid Plan

- Incorporates stakeholder's conceptual plan
  - Phased cutback approach
  - Forward pumps
- Adds cutbacks referenced to a calendar-based set of drought-management "zones"
- General consensus on Hybrid Plan reached at WRAC Issues Workshop in February and full WRAC meeting in March 2005
- SFWMD undertook development of LOWSM Plan

Recent Developments

- Dec. 2005 -- USACE accelerates Lake Okeechobee Regulation Schedule (LORS) study and targets Dec. 2006 for completion
  - Public meetings conducted
  - Inter-agency evaluation ongoing
- SFWMD moves in parallel to revise LOWSM Plan given changes to LORS and availability of temporary forward pumps (1,400 cfs)
- Modeling underway to develop draft LOWSM Plan

Recent Developments *(cont.)*

- LORS alternatives assume the LOWSM trigger line is one-foot lower than the current line as a surrogate for revised LOWSM Plan
- Final LOWSM modeling using USACE's tentatively selected plan (TSP) for LORS as baseline
- LOWSM Plan to be provided to USACE as comments to LORS SEIS

Milestones

- Governing Board Approval to Initiate Rulemaking – February 2006
- Initial Workshop – April 2006
- Modeling of SSM Strategy – July/August 2006
- Lake Okeechobee Water Supply Issues Workshops – Summer 2006


Discussion